NEWSLINE

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Trigger for rare bone disease found

By Charles Osolin
NEWSLINE STAFF WRITER

Scientists have tracked down the biological trigger that gives rise to Van Buchem disease, a hereditary, disfiguring bone disorder that can cause blindness and deafness.

The findings provide insight into long-range gene regulation and could lead to new treatments for osteoporosis and other crippling bone disorders.

A research team from Lawrence Livermore and Lawrence Berkeley national laboratories, the Novartis Institutes for BioMedical Research in Switzerland, and

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JACQUELINE MCBRIDE/NEWSLINE

DNA sleuths Jessie Chang (left), Nicole Collette and Gabriela Loots tracked down the genetic cause of Van Buchem disease.

Former Lab researcher Wei Cai earns presidential career award for computer simulation work

By Charles Osolin
NEWSLINE STAFF WRITER

Wei Cai, an assistant professor of mechanical engineering at Stanford University, was honored this week with a 2004 Presidential Early Career Award for Scientists and Engineers (PECASE) for work he did while serving as an Ernest O. Lawrence Fellow at the Laboratory.

The award, given annually to scientists and engineers who have advanced the fields of science and technology early in their careers, was presented by Presidential Science Adviser John Marburger in a White House ceremony on Monday. A separate award ceremony was held at the

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Wei Cai

Academy report calls for better biological attack risk assessment

By Lynda Seaver
NEWSLINE STAFF WRITER

In an effort to provide a framework for decontamination of public facilities and other buildings in the wake of a biological attack, a National Academy of Sciences report calls for improved risk assessment models to determine the effectiveness of cleanup, as well as when a building is considered "safe" for reoccupation.

The study, "Reopening Public Facilities After a Biological Attack: A Decision-Making Framework," was put together at the request of the Laboratory and the Department of Homeland Security. The academy's National Research Council convened a committee of experts to consider the criteria that must be met for cleanup of a biologically contaminated area to be declared successful, thus allowing reoccupation of the facility.

"The more prepared we are to respond to a biological attack, the greater the chance we have to prevent that from happening," said Ellen Raber, who heads up the Laboratory's Environmental Protection Department and served as the principal investigator for the report. Funding for the report came from the Nonproliferation, Arms

See **BIOLOGICAL,** *page 7*

NIF moves into next phase but faces challenges in upcoming fiscal year

By Bob Hirschfeld
NEWSLINE STAFF WRITER

The National Ignition Facility project is now installing all of the remaining optical components and control systems on the way to project completion.

Ed Moses, acting NIF associate director, told an all-hands meeting Wednesday, that with the successful conclusion of the NIF Early Light experiments, the project has proven it will be capable of fulfilling the technical requirements for its weapons physics, inertial confinement fusion, and basic science

See **NIF,** *page 8*

ReNOVAted laser enables new research

By Anne M. Stark
NEWSLINE STAFF WRITER

The ground-breaking capabilities of the former Nova petawatt laser are alive in Bldg. 174.

Using parts from Nova and other now-dismantled Laboratory lasers, physicists have developed a new intense-short-pulse laser that will open up a whole new world of research.

The product of a two-year

See **TITAN,** *page 7*

JACQUELINE MCBRIDE/NEWSLINE

Engineering's Jim Bonlie checks diagnostics on Titan.

Administrative workshop empowers staff

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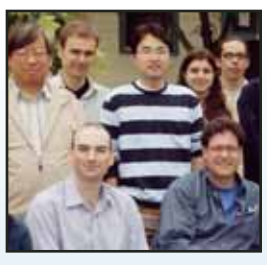

Summer students provide youthful energy

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Russia hosts weapons labs meeting

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LAB COMMUNITY NEWS

Weekly Calendar

Technical Meeting Calendar, page 4

Saturday 18

Beginning today, the Laboratory's week of special events in celebration of the **World Year of Physics** will be broadcast on Comcast Channel 26, which serves the cities of Livermore, Pleasanton, Dublin, San Ramon, Castro Valley and Sunol. The broadcasts will run through Wednesday, June 22.

• 6 p.m. – Livermore Chamber of Commerce luncheon, with speaker **Simon Labov,** physicist and director of the Lab's Radiation Detection Center.

• 7 p.m. – LLNL's **"Community Leader Day."**

• 8:30 p.m. – The **"Future of Physics"** panel discussion, featuring Director Emeritus Bruce Tarter, Deputy Director Cherry Murray, former director John Nuckolls, Biosciences Associate Director Elbert Branscomb, Karl van Bibber of the Lab Science and Technology Office and N Division physicist Leslie Rosenberg.

• 10:15 p.m. **"Einstein in 1905 — Three Kinds of Originality,"** a Director's Distinguished Lecturer Series talk by Stanford professor C.W. Francis Everitt.

Monday 20

Effective July 1, the account and record-keeping service for the **UC Retirement Savings Program** will be transferred to Fidelity Investment Tax-Exempt Services Company (FITSCO). At the completion of the transition to the new record-keeping service, FITSCO will be handling the administration for the Defined Contribution Plan, Tax-Deferred 403(b) Plan, and 457(b) Deferred Compensation Plan. A series of informational group sessions have been scheduled for a FITSCO representative to review information about the transition and answer any questions. The first sessions will be held today from 9:30-10:30 a.m. and from noon to 1 p.m. in the Bldg. 361 auditorium. A second session will be held July 5 from noon to 1 p.m. in the bldg. 543 auditorium. For further information, contact the Benefits Office, 2-9955

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A **Fidelity** retirement counselor will be available today and June 28 to assist with assessing the current state of retirement accounts, learning how to diversify, planning asset allocation, and identifying income strategies. Fidelity Investments Mutual Funds are available to UC's workplace retirement plan participants, in addition to the UC-managed investments pools. To set up a consultation with a Fidelity representative, call 800-642-7131. When calling, be sure to specify that you are an LLNL employee.

In Memoriam

George Kwei

Retired Lab physicist George Kwei, a resident of Kensington, died June 8 in San Francisco. He was 66.

Kwei was born in Hunan, China, the son of Kwei Yun Ching and Kwei Ho Shang Ching.

He was a graduate of Harvard University and UC Berkeley, where he earned his doctorate in chemical physics. Kwei was a member of the University of New York, Stony Brook faculty. He subsequently pursued research at Los Alamos National Laboratory, where he served as deputy associate director for Chemistry, Earth and Life Sciences, and as special assistant to the director.

Kwei also worked at the Laboratory, where in 2001 he was awarded an Edward Teller Fellowship. He was the husband of Gloria Kwei, who headed the Human Resources Department at LLNL. His lifelong passions included music and art.

He is survived by his wife, Gloria; a son, Lawrence, his wife Denise, and their three children; and a daughter, Erica. Memorial services were held in San Francisco.

Jerry C. Stephens

Jerry C. Stephens, died June 3. He was 62.

Stephens worked in the Material Distribution Division for 21 years and retired in 2002. He started his career as a heavy duty driver, then supervisor in the former Transportation Group and finished his career as the building coordinator/FPOC for Bldg. 411.

Stephens was an avid hunter and fly fisherman. He moved to Shingletown, Calif. where he lived his dream of being close to nature.

He will be mourned and deeply missed by his family; his son and daughter-in-law, Todd and Cheri Stephens of Livermore; daughter, Wende Cordero of Tracy and five grandchildren. He also leaves behind Zac, his black lab, who was his hunting partner and constant companion, as well as a great many friends and relatives.

A celebration of Stephens' life will be held on Thursday, June 23, from 3-6 p.m. at the Robert Livermore Community Center. Come and share your memories of Stephens with his family. In lieu of flowers, send donations to the Livermore-Pleasanton Rod and Gun Club.

Wilson Lynn Collins

Retiree Wilson Lynn "Rip" Collins, supervisor of the badge office in the late 1970s, died at Riverside Hospital in Columbus, Ohio March 26. He was 92.

Born in Hazen, Ark. in 1912, Collins enlisted in the Navy at the age of 18 and retired as a full commander. During his 27 years in the service, he commanded two Navy vessels, the USS Electron and the USS Molala. Collins was captured off Corregidor by the Japanese at the start of World War II and was imprisoned for the remainder of the war in the Philippines and later in Japan. After the war, he volunteered to return to Japan for a three-year tour of duty.

Collins came to the Laboratory after retiring from the Navy and held a variety of security positions, retiring from LLNL as supervisor of the badge office in 1980. He enjoyed playing golf, reading and doing crossword puzzles. Raised during the Depression, his daughter Robin Collins McAdams describes him as a "self-made man" who pursued education throughout his life.

He received full military honors at his funeral, including a 21-gun salute, in Hazen, Ark. His wife, Helen Collins, preceded him in death in 1989. He is survived by his only daughter, Robin Collins McAdams, her spouse Robert W. McAdams, Jr. and his grandson, Brandon Collins McAdams.

In lieu of flowers, donation may be made in Collins' name to the Salvation Army.

Mark S. Jones

The family of Lab employee Mark S. Jones, who died Oct. 27, 2004, will hold a celebration of his life at 1 p.m. Saturday, July 16, at the Masonic Hall, 212 N. Powers Ave., Manteca. Dress will be casual and Hawaiian shirts are encouraged.

RSVP to vljones1@comcast.net or call 209-815-6674. The In Memoriam for Jones was published in the Friday, Dec. 10, 2004 edition of *Newsline.*

Newsline

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'Got Science?' offers community hands-on science

Back for a second year and just in time to celebrate the "World Year of Physics 2005," the Lab's summer science extravaganza "Got Science? Discover Science Saturday," is set for June 25, from 10 a.m. to 2 p.m. at the Lab's Discovery Center.

The event, sponsored by the Public Affairs Office, is geared for science aficionados of all ages, and promises to be a packed day of science-related activities for families, community members and visitors to showcase the Lab's science and technology.

Experience a wide array of unique displays, demos and hands-on activities for all ages and scientific tastes. Participate in "Fun with Science" demos, make your own DNA jewelry, watch a robot at work, ride an energy bike, create your own earthquake and enjoy the tunes of the band "Scientific Jam."

In the Discovery Center, discover new displays now on loan from the Exploratorium. These hands-on exhibits will put you in touch with the laws of physics. Get caught up in a tornado, guide a satellite, activate a pendulum snake and spin a sphere to observe turbulence.

In addition, budding scientists and students can interview roving Lab "mystery scientists" to learn more about their fascinating fields of expertise.

Admission is free. Food will be on sale and continuous shuttle service to and from the parking area will be available. For more information, call 2-4599 or check the Web at www.llnl.gov/pao.

Briefly

New biosafety seminar

Are you working on projects involving biological materials? Do you need to understand the hazards of working with these materials? Hazards Control has openings in a new biosafety seminar course, "Working Safely with Biological Materials at LLNL," HS4432, on June 22, 8 a.m. – 5 p.m. in Trailer 2679, room 1222. There is no charge for this session. In this seminar, you will learn about risk assessment of biological materials and become familiar with biosafety controls. You'll also learn about biosecurity and emergency response and LLNL's biosafety program. This seminar is aimed at LLNL researchers and scientists, but others such as assurance managers, facilities and operations managers and ES&H support personnel also may benefit. A reference binder will be provided to all attendees. For more information, go to the LTRAIN Website (insert link: http://www-r.llnl.gov/es_and_ h/ltrain/) or contact Hazards Control training, at 2-5158.

Discovery Center summer hours

Bring your summer visitors to the Discovery Center and celebrate the "World Year of Physics 2005." A new exhibit pays tribute to Einstein's remarkable scientific achievements and their impact on the Laboratory's research. Watch a 20-minute video, "Einstein: The Man Behind the Science." Learn more about the Lab's physics research areas — shock and condensed matter physics, astrophysics, fusion energy, lasers, medical technology and homeland security.

Try your hand at the new exhibits now on loan from San Francisco's Exploratorium until the end of July. The interactive demonstrations provide hands-on activities that demonstrate basic laws of science. Get caught up in a tornado, guide a satellite, activate a pendulum snake, and spin a sphere to observe turbulence.

The Discovery Center is located at the Lab's East Gate Drive and Greenville Road and is open Monday through Friday, 12-4 p.m. and on Saturdays from 10 a.m. to 2 p.m. through July. After Aug. 1, the center will be open Monday to Friday, 1-4 p.m. and the first and third Saturday of the month. For more information, call 3-3272.

Film screening open to Lab employees

Producers of a public television documentary about how regional communities have dealt with hate crimes, "Not in Our Town: Northern California," will hold a special advance screening of the film for Laboratory employees at 11:30 a.m. Thursday, June 23, in Bldg. 482, room 1103 (NIF auditorium). The film features five stories of Northern California communities, from the suburbs of Silicon Valley to Sacramento, and the actions they have taken against hate crimes.

Immediately following the presentation, there will be a Q/A with the producers of the film. This event is co-sponsored by the WorkLife Center, Laboratory Gay Bisexual Transgender Association, Amigos Unidos and the Association of Black Laboratory Employees. Call the WorkLife Center at 2-9543 for more information.

A Long view of Administrative Workshop

Frank Nunez/TID

Top right: Jane Long, associate director of the Energy and Environment Directorate, provided the opening remarks.
Above: To kick off the day's activities, the Lab's Nori Adair (center) and Germaine Clark (right), took part in a group ice-breaker that got participants on their feet.

A day full of information, inspiration and personal introspection was offered at the seventh annual LLNL Administrative Workshop on June 7. The Biosciences (BIO) and Nonproliferation, Arms Control and International Security (NAI) directorates co-sponsored the event for approximately 120 administrative staff. This year's theme was "Define and Embrace Your Power."

Jane Long, associate director of the Energy and Environment Directorate, provided the opening remarks and the keynote speaker, Jeanne-Marie Grumet, talked about "Living with Purpose and Passion," providing tools to improve work and personal lives. Panel members included Kristen Kulp, who discussed diet and cancer; Phil Arzino, who spoke about the new food pyramid; Christine Hartmann-Siantar, who presented information on molecular radiation therapy for cancer; and Kay Gorsuch, who explained options available to employees in the Lab's Employee Assistance Program.

Each year the goal of the workshop is to improve communications between directorates, provide information about the Lab's mission and program and highlight the important role of nonexempt administrative support in the Lab's operations.

NEWS YOU CAN USE

Lab programs welcome some 600 summer students

By Linda Lucchetti
NEWSLINE STAFF WRITER

It's summer, that inspiring time of year when Lab employees look forward to welcoming hundreds of young, bright, science-minded students to the site.

According to Diana Toon, employment specialist for the Scholar Employment Program in the Administrative and Human Resources Directorate (AHRD), this year is no exception.

Toon reports that approximately 600 students from around the world are due to gather here to work alongside scientists throughout the Lab. Many arrive from the state's University of California sites, some represent eastern U.S. colleges like MIT and Harvard, and others are from foreign nations. Some are returning from last year's program.

"I am very proud to be part of this program. While the Lab is planning for the future, I believe these young people are our future — our student population is the pipeline," Toon said, adding that exposure to the Lab often influences many students to seek post-doc positions and full-time employment after graduation.

Toon organizes a busy student employment process on behalf of the Recruiting and Employment Department, working closely with Lab programs to complete new-hire packages. The employment span of the students can vary from six to 20 weeks, and schedules differ, with many graduate students remaining year round.

This year, Toon also chairs the 25-member Institutional Education Committee (IEC), a lab-wide team that convenes each spring to coordinate seminars, panel discussions, tours and activities geared for students. The committee includes representation from neighboring Sandia National Laboratories that hosts approximately 200 students at the Livermore site. Funding for the IEC organized events is derived from a partnership with the University Relations Program.

Toon said that last year's end-of-program evaluations determine which activities the students enjoyed, found interesting and are worthy of repeating, such as the popular panel, 'Women in Science: Career Challenges,' as well as on-site tours of Lab facilities, and off-site tours, including a trip to the UC Davis campus.

A student welcome reception will be hosted by the Director's Office on Monday, June 27, at 3 p.m. in the Bldg. 123 auditorium. Students can access the Student Bulletin Board to register and view a complete schedule of activities at http://education.llnl.gov/sbb/

Summer Student Calendar

Seminars, panels and other activities are now in full swing for summer student employees. Go to the Student Bulletin Board at http://education.llnl.gov/sbb/for details and to register for events.

Wednesday 22

Seminar: Increasing Awareness, by Wes Spain, National Arms Control & International Security (NAI), Z Division. Noon to 2 p.m., Bldg. 132S, room 1755. Contact: Barry Goldman, 2-5177.

Thursday 23

Panel (first in a series of three panels): Young Researchers: Careers and Challenges,10:30- noon, Bldg. 453 auditorium, Armadillo Room. Contact: Karen Lema-Crowe, 2-5177.

Technical Tour of NIF, 9:45 a.m., Bldg. 581. Contact: Laura O'Brien, 2-7295.

Engineering Tour, includes Precision Engineering Labs, NIF target fab area, main machine shops, Non-Destructive testing area, Materials Test area and the Vacuum Process area. Contact: Barry Goldman, 2-5177.

Please send your summer student calendar items to lucchetti1@llnl.gov

Technical Meeting Calendar

Friday 17

INSTITUTE FOR GEOPHYSICS AND PLANETARY PHYSICS
"Testing the Black Hole Gravity," by Marek Abramowicz, Goteborg University, Sweden. Noon, Bldg. 319, room 205. Property protection area. Foreign national temporary escorted building access procedures apply. Contact: George Chapline, 2-4106, or Lisa Lopez, 3-0250.

Tuesday 21

PAT DIRECTORATE WIDE SEMINAR
"Quantum Tic-Tac-Toe - Understanding Superposition," by Allan Goff, Novatia Labs. 2 p.m., Bldg. 361 auditorium. Property protection area. Foreign national temporary building access procedures apply. Contact: Alan Wootton, 2-6533.

Wednesday 22

LDRD
"FY2006 LDRD Lab-Wide Oral Presentations," by Lab-wide speakers. 8 a.m.-5 p.m., Bldg. 211, room 227. Foreign national temporary building access procedures apply. Property protection area. Contact: Jim DeYoreo, 3-4240, or Nancy Campos, 2-9805.

CONTROL AND DATA ACQUISITION USERS GROUP
"Data Acquisition & Control Systems," by IOtech. 1 p.m., Bldg. 361, room 1140 auditorium. IOtech will talk about data acquistion and control systems and will supply catalogs and information about their products. Property protection area. Foreign national temporary building access procedures apply. Contact: Thomas Clark, 2-0285.

Thursday 23

BIOSCIENCES DIRECTORATE
"Hematopoietic Stem Cells as Vehicles for Therapeutic Gene Delivery in Human Disease," by John Tisdale, M.D., Molecular and Clinical Hematology Branch, NIDDK/NIH. 10:30 a.m., Bldg. 361 auditorium, Darwin Room. Refreshments available at 10:15 a.m. Foreign nationals may attend if the appropriate security planis on file, which includes Bldg. 361. For a complete schedule of seminar speakers, titles, abstracts and supporting information, go to http://bioseminars. llnl.gov/. Contact: John Hinz, 4-3686.

ENGINEERING
Seminar series: "Global Energy Security, Renewable Energy, and Roadmap to a Hydrogen Economy — Wind Energy," by Gunnar Tamm, U.S. Military Academy. 9-10 a.m., Bldg 543, room 1258.

JAVA DEVELOPER GROUP
"Monthly Java Group Meeting," by Java Developer Group. 3 pm, Trailer 3925. Informal discussion of Meta Object Facility part of OMG's Model Driven Architecture. Common use facility. Foreign nationals may attend. Contact: Mark Koo, 3-1223.

Friday 24

PHYSICS & ADVANCED TECHNOLOGIES /BIOAEROSOL WORKING GROUP SEMINAR
"Characterization of Recombinant Viruses Using the Integrated Virus Detection System (IVDS) and Small Angle Scattering," by Deborah Kuzmanovic, Edgewood Chemical Biological Center and NIST Center for Neutron Research. 10:30 a.m., Bldg. 151, room 1209, Stevenson Room. Property protection area. Foreign national temporary building access procedures apply. Contact: Matthias Frank, 3-5068.

CHEMISTRY & MATERIAL SCIENCE MATERIALS SCIENCE AND TECHNOLOGY DIVISION
"Surface Chemistry at the Nanoscale," by Fernando Reboredo, H Division. 3:30 p.m., Bldg. 235, Gold Room. Contact: Tom Felter, 2-8012, or Rebecca Browning, 2-5500.

The deadline for the next Technical Meeting Calendar is noon Wednesday.
Please submit your meetings via the new Technical Meeting Calendar form on the Web, located at http://wwwr.llnl.gov/tmc/index.html
For information on electronic mail or the newsgroup llnl.meeting, contact the registrar at registrar@llnl.gov.

Decked out in 'Safety Orange,' 250 bikes join Lab fleet

Stylish in their bright, easy to spot "Safety Orange" paint and more resistant to rust, the newest additions to the Lab's bicycle fleet have started making their debut.

Purchased from Seattle Bike Supply, 250 rough-and-tough unisex Boardwalk StepThru models are joining the Lab's bike fleet at the rate of about five per day, said Beverlee Morales of Plant Engineering's Fleet Management Group.

The new bikes arrived on site at the end of May. They are assembled, inspected, and receive a Lab logo and inventory number before being placed into service. Coincidentally, the first new Boardwalks began service June 2, the day after the Laboratory began observance of Bicycle Safety Month.

Like other bikes in the fleet, the Boardwalk StepThru models have coaster brakes that work when a cyclist applies backward pressure to the pedals. Coaster brakes, said Dennis Barrett of the Laboratory's Traffic Safety Committee, are more effective in wet weather than handlebar-mounted, cable-control braking systems prevalent on personal ten-speed and mountain bikes.

The Boardwalk StepThru bikes also feature quick-release seat levers that allow Lab riders to adjust seat height easily for comfort and safety. The Lab first adopted the quick-release lever more than 15 years ago.

When all bikes are in service, the Laboratory will have a fleet of some 1,100.

"We work hard to keep our bikes in service and safe to ride," says Morales. "The bikes are very popular with employees, who indicated in a survey a few years ago that they are a preferred mode of transportation on site. One of the reasons we selected the Boardwalk bikes is that they will resist rust, and so they have the likelihood of staying a part of our fleet for a very long time."

Keeping Lab bikes in top working order is the job of Fleet Management's Bike Shop, operated by a three-person repair crew under a contract through Johnson Controls with AID Employment. AID is an acronym for Advancement for Individuals with Disabilities, a program the Laboratory established in the mid-1970s with the Association for Retarded Citizens of Alameda County to provide full-time contract work for developmentally challenged citizens.

Bicycle Safety Month

Each day the Bike Shop lead makes his rounds in the morning, picking up bikes that employees have left at the end of the previous workday at one of the perimeter gates or near an employee parking lot, so he can redistribute the bikes throughout the site.

While doing this task, the lead also looks for bikes that have been turned upside down, a sign that the last bike rider encountered a problem—insufficient air in a tire, a wobbly wheel, a flat tire, loose handlebars or seat. He also examines the bikes he is redistributing to see that they carry the proper color-coded tape signifying they have had their annual safety inspection. Daily, he takes several bikes out of service to send them to the shop for a thorough annual safety examination or for preventive maintenance.

Normally 12-15 bikes wind up in the Bike Shop daily for either maintenance or an A-Z safety inspection.

Morales calls the arrangement with AID Employment a "win-win situation." Said Morales: "The AID workers do a very good job taking care of our bikes. They are dedicated to the work, do not get bored, and are proud of their efforts."

Here are some guidelines regarding use of Laboratory bicycles (also see bicycling tips on this page).

• Do not stash a bike away in a building or cubicle or behind a bush so you can use it for a return trip. Keep it in sight and available to the next rider. Bikes are not assigned to individuals and are allocated for one-way use.

JACQUELINE MCBRIDE/NEWSLINE

Bike shop workers Richard Dingman (left) and Travis Logerwell assemble one of the new "Safety Orange" Boardwalk bikes.

• Inspect the bike. Make necessary adjustments (seat height, brakes, tires, etc.) before riding off. If you need air on-site, compressors are located at Fleet Management, Bldg. 611; Bldg. 231 West; and Bldg. 217. The recommended tire pressure is marked on the tire sidewall.

• Avoid riding in a way or location that will damage tire rims or tires. For example, don't jump bikes off curbs or ride them over rough, gravelly terrain.

• Slow down when trying to negotiate around stationary obstacles, such as bollards or other fixed objects.

• Pay attention to your surroundings when riding, and avoid using a cell phone while on a bike.

• Don't ride a Laboratory bike in the early morning darkness or at night. Lab bikes are not equipped with a headlight, necessary for safety in the dark.

• Use Laboratory bicycles only within the Laboratory gates. Do not take a bike off-site.

Learn about bike safety on the Web

Take **HS5420-W: Bicycle Safety**, recommended by the LLNL Traffic Safety Committee.

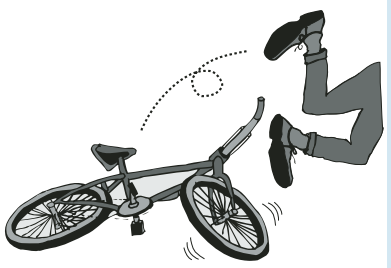
This course provides comprehensive tips on biking safely. Learn how to do a quick safety check before using a Lab bike, hazards to be aware of when riding, the principles of defensive riding, and much more.

You can find the 15-minute course at *http://www-hctrain.llnl.gov/SET/HS5420/BS01.html*

Although bike accidents happen, they can be avoided

Using a Laboratory bike is a convenient way to get around the site. However, along with the convenience comes the potential for an accident. But most accidents—either on- or off-site—are avoidable and result from inattention to riding safely. For example, automobile-bicycle collisions occur when a vehicle driver opens the vehicle door or makes an unsafe turn into the path of a cyclist. Other common causes of bicycle accidents include:

- Cycling too fast.
- Making an unsafe left turn.
- Riding too close to motor vehicles.
- Using the wrong side of the road.
- Riding from a driveway or sidewalk into the path of a car.
- Weaving, leaving the edge of the road or bike lane.
- Letting go of handlebars (to wave to a friend or reach for a badge), or carrying a heavy load in one hand while trying to steer with the other.



Follow these tips and you'll be safe when riding a bicycle

Don't be a bicycling accident statistic. Here are some tips to keep you safe while biking on- and off-site.

1. Make a quick bicycle inspection: Is the seat secure and at the right height? Are the tires well inflated? Is the chain on? Are the brakes working?

2. Wear a bike helmet (required if under 18 years of age).

3. Wear clothing in bright colors or with reflective stripes.

4. Use approved headlights and reflectors for riding at night (Lab bikes do not have this equipment).

5. Do not wear loose clothing that can become caught in the chain or wheels.

6. Obey all traffic laws as if you were driving your car.

7. Use bike lanes when provided, except:
- When necessary to pass another bicycle, vehicle or pedestrian.
- When getting ready to turn left.
- When necessary to avoid parked cars or other objects.

8. Give proper hand signals when turning, stopping or leaving a lane.
- Left turn —left arm straight out pointing left.
- Right turn — left arm pointed straight up, or right arm straight out pointing right.
- Stop or slow — left arm pointed straight down.

9. Stay near the right edge of the road, except:
- When getting ready to turn left.
- When passing a parked vehicle or to avoid other objects.
- When on a one-way road, two lanes or wider. In such situations, a bicyclist may ride near either the left or right side of the road.

10. Use caution when transporting loads on bicycles:
- Use a bag, briefcase or large envelope to hold small items that may slip through a wire basket and catch in the wheel spokes.
- Carry loads that will completely fit in the basket or that can be safely secured.
- Avoid carrying loads that are too heavy or oversized and may cause you to lose control of the bicycle.
- Do not carry a load in one hand and try to control the bicycle with the other.

11. When approaching pedestrians from the rear, annouce your presence with a warning, such as "on your left."

Classified ads

See complete classified ad listings at https://www-ais.llnl.gov/newsline/ads/

Automobiles

1995 - Lexus SC300, Dark Blue, Runs Great! Fully Loaded! Just replaced Alternator and Drive Belt. 94K, $9,995.00 925-373-0751

1973 - Super beattle runs, good body but needs work $1000. 925-443-1482

1995 - Chrysler LeBaron GTC convert., 82K orig. mi., 3.0L, spruce green, CD, all-pwr, ABS, leather, prem. wheels, fine cond. $3750 925-447-7082

1964 - Complete V8 Front Suspension for 1964-68 Mustang/Ranchero- 6 cylinder to V8 swap, drum brakes, new V8 springs, shocks. Good Cond $50.00/ OBO 925-447-2975

2002 - Jet Black Corvette Convertible FULLY loaded 10,045m extended warranty & special sealants; will negotiate good deal. Call for details. 925-373-3195

1998 - Mercury Sable, special edition, loaded, great car, but transmission needs work, make offer. 925-447-6707

2004 - Ford Focus ZX5, auto, dark blue like new with only 3800 miles, $12,275 925-447-8817

2001 - Chrysler 300M. Excellent Condition Gold - Fully Loaded - Sun Roof - All leather. 60K miles. $12,500. 209-832-7204

2002 - Toyota, Sequoia, Ltd,4x4,Silver,40k Mi.7 Pass, Loaded Leather,Dvd,Tow, Like New,$28950.00 Obo, 925-556-1780

1998 - Ford Explorer LTD, AWD, V8, power everything, CD changer, sun/moon roof, many extras, AC, roof rack, leather, 125,000 mi, $7750 925-373-1757

2001 - Toyota Camry, V6, sunroof, am/fm, cd/ cassette,power doors and windows, white exterior, gray interior, 47,000 miles, excellent condition, $14,000. 209-526-3807

1999 - Mercury Estate Villager Minivan, Burgundy. Leather, frnt/rr air, frnt/rr radio. Auto everything. Very clean. Great condition. Can see on site. 925-216-4331

1993 - Plymouth Voyager LE van. great shape, 140K miles. reblt trans, Infinity sound, chrm whls, good tires, always garaged, orig.paint. $2,850.00 925-830-8481

2001 - Honda CRV, 43K, 5 speed manual, 4WD, air, cruise, bra, CD,Cassette, new tires, $13,850 925-462-2468

1972 - Suburban, 350, Pertronix and Jacobs ignition, 350 turbo xmiss, AM/FM/CD, new front end, carpets, interior paint, weatherstrip, remote locks. 925-454-8516

Bicycles

Mens 12 spd Ross Tour Bike, $180, Womens 10 spd Roadmaster Tour Bike, $75 925-373-1757

Burley bike trailer for two. Very good condition. $125 OBO. 925-606-0755

Boats

35 Horsepower electric start outboard with propeller, throttle and shift cables, steering cables, key and gas can. 766-8233. Make Offer. 925-516-2570

1979 Tahiti Bubble Deck Ski boat. 150 hp V-6 Mercury Black Max OB engine. Ski/Wakeboard Pole. Many extras. Excellent Condition!!! $5200.00 OBO. 209-629-1472

Canoe - 16 ft. Aluminum, good condition 925-323-7147

Alum. Fishing Boat, 14ft, 15hp Honda plus 7.5hp Merc, custom trailer (16in wheels), elec. trolling motor, lots of extras! $2,499 obo. 925-371-1854

Cameras

Nikon N70 camera body like new. $85 925-837-4331

Giveaway

1957 ford f100 parts truck or project. come and get it.please call after 6:00 pm thanks 209-574-0939

2 wine barrel planters free to a good home. You haul. 209-830-0691

Bricks, free! You haul from Springtown in Livermore. 925-443-1673

Blue couch in good condition. Perfect for renter not ready to buy their dream couch. We just got a free upgrade so we have one to give away. 925-980-6478

Household

Armoire -- ~6 ft x 3 ft, 12in depth. Oak finish. In good condition. $40 925-218-2161

White metal sofabed frame. You add the futon. $40 firm. 925-516-2570

Carpet,10ftx10ft,berber,like new w/lifetime pad $50.Lawn mower,3.5Hp,20 inch,runs great, $25.Power edger,gas,2Hp,good cond. $25. 209-830-0684

Hotpoint self-cleaning stove for sale. Gas with super burner. Electronic controls. Bought new in 2001 for $500.00 asking $200 925-373-9976

Kenmore 25 cu. ft. white side-by-side refrigerator, 4 years old, water and ice in the door. Like new! $400 925-373-1886

Canning jars, various sizes. $10.00. If interested, will bring to work. 510-582-2938

Oak Desks (2 Small) Drop Down Front, Two Drawers, Excellent Condition, $50/Each. Buy One Or Both. 925-443-8889

Couch and loveseat: clean and in good condition, beige with small print, traditional early-American style, $100 925-449-0463

Moving sale!!!, lvg rm set, glass table set, walnut desk, walnut hutch, oak bar stools, washer/dryer, futon bed, patio furn 925-373-1757

Clothes Dryer, Electric, Deluxe Large Capacity Model with electronic keypad/display panel, $20, u-haul 925-484-0697

Sofa and loveseat, navy and bronze stripe, excellent condition $250 925-455-1547

Childrens items: highchair, great shape. Booster seat. toodler bicycle seat, fits on adults rear bike rack. Make offer. 925-829-1474

42 inch solid oak dining table with four cushioned chairs.$90 925-837-4331

Twin size Captains Bed, Light oak, 4 drawers and cabinet under bed. Great childs or guest bed. Very good condition. $150 OBO. 209-740-8193

$20 New Jeld-Win picture window. Grids. White. LowE. Fits frame size 46in x 60in. Like an idiot I ordered the wrong size on a custom window. 925-980-6478

Antique childs desk, drawers and pull out board, $125; Nice oak desk with 4 drawers, $180. 925-449-3499

Miscellaneous

Radial arm saw, 9 inch sturdy cast frame fully adjustable $100 925-447-8817

Unused Certainteed Presidential TL Roof shingles in original bags. Color: Autumn Blend. You pick-up. $10 per bag. 925-373-7842

Southwest ticket must be used before 8/24/05. Value $72.10 - Sell $50.00 925-998-2620

A`s vs Giants at Oakland 6/25 1:05PM 4 seats 3rd baseline, Section 222/Row 8 $26/ticket 925-449-5481

Sears Garden Tractor& Roto Tiller-Briggs & Stratton 11HP engine; 38 inch self powered 8HP tiller ,Good condition-$900 925-373-3195

Stevie Nicks tickets (2), Chronicle Pavilion 7/30, lower level 105, Row W, will sell for $85.50 each (no fees!). 925-895-1795

YANMAR YM1500D Tractor 19HP Diesel 4wd 3pt hitch PTO 8 speeds with tiller, box-scraper rear scoop, great for landscaper, or small property. $4950.00 925-449-8009

Shaper 1/2 inch arbor $1,000, radial arm saw, 12 inch $450, arbor press $100, all ex cond. 925-454-9160

Motorcycles

2001 - Harley Sportster 1200C Custom pipes,seat,sheild 3600mi. Ex. condition Asking $6500 209-832-1415

First Gear Recon Jacket, blk leather, XXL, snap in liner, built in elbow pads, cruiser/Harley styling, like new rarely worn. Cost $450 new, $200 obo. 408-712-1730

2003 - Kawasaki Ninja 250. 1300 miles. Green, comes with matching Shoei helmet (small) and Sidi Champion Tepor boots (size 41). Excellent condition. $2500 925-984-1690

1998 - BMW R1100RT, Great shape,All bags, new tires & brakes, just serviced and tuned,115k miles Ready to Ride! $4500.00 209-599-4644

1987 - Suzuki DR80 great kids bike,well taken care of, runs perfect,kids out grown gathering dust $800.00 obo 925-584-8386

1999 - LePera Monterey Seat for Harley 97-02 Roadking. Great shape, very comfortable. $200 OBO 925-455-8006

1992 Yamaha XT225D on and off road, very clean and runs perfect,current registration. Extra graphics, new tires,must sell $1100.00 obo 925-240-5130

Music Instruments

Guitar, Lotus Amigo, 3/4 size, perfect condtion with case $120 925-484-9028

Pets & Supplies

New Innotek Preimium Rechargable IN GROUND Pet fencing system 1000 feet (2spools) wire and surge suppressor. $199 925-785-4680 925-785-4680

Puppy, full blooded pitbull, to be given to a good home willing to show him lots of love and attention. Prefer Livermore home. Pictures available. 925-487-2246

Cage for critters. Great for Guinea Pigs, Rats, Hamsters, dry reptiles, tortoises, etc. Lamps, timers, heaters, the works, $20 925-484-0697

Recreation Equipment

Pitching Machine, Batting Cage for baseball/softball, Atec Casey2, cage 9x11x50, machine and net in Excell Cond, paid $1600 new, sell $800 209-830-0728

Ridesharing

Express your commute, call 2-RIDE for more information or visit http://www-r.llnl.gov/ tsmp.

Sacrmento - Looking for Van/Car pool from Sacramento to Lab. Monday thru Friday. 916-502-5119, ext. 4-4945

Patterson - 2000 Dodge Ram 3500 Van/15-passenger commuter vanpool. I am moving; riders do not want to take over. Must sell. $6,500obo. 209-892-2118, ext. 2-9502

Services

Licensed Livermore daycare provider has an immediate opening for a child, two months through three years old. 925-606-0697

INTERIOR, EXTERIOR PAINTING free estimates. Its a good time for painting before the weather gets too hot. Excellent workmanshp, references. 510-537-7222

Murals, decorative painting, faux finishing and trompe loeil and childrens fantasy rooms 925-461-5045

Shared Housing

RIPON - room available in new home Aug. 1st. Very quiet area, private entry, garage, spa and pool. No smoking, no pets, $500.00 per mo. 209-599-3994

Trucks & Trailers

1979 - 4x4 Suburban Silverado small block 400 CID, auto, runs and drives, as-is, needs a little attention. Many new parts and extras. $900.00 925-413-2382

1996 - Ford Ranger XLT, extra cab, good running, bedliner,long bed, security system, cassette. 5,290.00 OBO 510-537-7222

1999 - Expedition-Eddie Bauer 4WD-5.4L, Leather,3rd row seat, rear AC, 6-disc changer, new 20inch wheels, new brakes, tow package, 106K miles $16,000 OBO 209-983-0190

1993 - Travel Trailer, 27 ft Prowler, self-contained, like new condition, little use, front kitchen, AC, Micro, NADA book value $4570. Sell $4300 firm. 408-272-4612

1998 - Ford 1998 F150 Super Cab w/third door, V6 4.2 L Auto 2wd, A/C, Pickup Shell with full Carpet, Tow Pkg., 60K miles , Mint condition, $11K 209-847-0585

1987 - GMC Blazer full size, new 350 motor,700r tranny, transfer case. Body straight and clean,new tires,brakes. must sell $7500.00 obo 925-584-8386

Vacation Rentals

Tahoe cabin for rent 2 blocks from Heavenly, 2 miles from casinoís. Sleeps approx 8 adults. $400/wk, $200/wknd. 925-240-1615

SOUTH LAKE TAHOE - 3 Bedroom 2 Bath Chalet, nicely furnished, quiet area, park with Lake, tennis, etc., Great for family vacation. RESERVE NOW! 209-599-4644

Maui - 3 bedroom, 2-3 bath, King, king, 2 full, sofa sleeper. 2200 sq ft. 9/18-9/25 (Sun-Sun). Kahana area. Beautiful. 925-828-3295

South Lake Tahoe - Great family home for rent 4B, 2BA, game room and spa, near hiking and biking trails 925-373-0650

Wanted

WANTED: Your gently used 2003 ACURA 3.2TL (type S would be nice) prefer white or silver. 925-455-0515

Looking to buy a boy day bed or twin bed. 925-443-1903

Wanted - metal toy soldiers, complete or partial sets ok. 925-455-1227

Bathtub refinisher, or comments on local products available. 925-735-6002

Wanted: boat trailer, 20 ft or longer to customize for 3 jet skis. 209-239-7888

Pressure Washer for around home use Up to $100 925-455-8006

local house or condo for rent, 2bd, 2ba, sept-15 through nov-15, house under construction. 925-455-1547

Person working at NIF that purchase a wire type dog cage from me. I have the top to the cage. Please call me at 925-961-1658

Donate your canoe to Livermore boy scout troop 939. Get a tax break plus free access to multiple canoes. 925-449-9423

Due to space limitations, *Newsline* may withhold ads that have already run. They will still appear on the Web.

TITAN

Continued from page 1

collaboration between the Physics and Advanced Technologies, National Ignition Facility, Chemistry and Materials Science and Engineering directorates, the Titan laser achieved first light at 50 terawatts last week. With institutional funding from the Laboratory Science and Technology Office, Titan is currently being commissioned and will be ready for experimenters in October.

Andrew Ng, who serves as Titan's scientific director, said the new laser is the perfect environment for multi-disciplinary experiments serving clients from PAT, NIF, DNT and the CMS directorates.

When complete, Titan will be the Laboratory's first combined long-pulse (nanosecond) and ultra-short-pulse (sub-picosecond) laser operating at hundreds of joules in each of its two beams. It is one of only three petawatt-class lasers in the world (the others are in the United Kingdom and Japan).

NIF's Brent Stuart, who designed the large vacuum pulse compressor that is the core of Titan, said: "This design takes advantage of novel multi-layer-dielectric-coated grating technology and maximizes the intensity on target given the geometric constraints." This grating technology, from the group led by Jerry Britten of CMS and NIF, will support future systems at the Lab and elsewhere.

Research scientists see Titan as an experimental platform that complements the Omega laser and supports future experiments to be carried out at the NIF.

"There's a broad range of experimental users," said Ng, who works in V Division. "With Titan, you can open up a whole new world of research."

Titan is housed in the Jupiter Facility, formerly known as the Bldg. 174 Laser Facility. The facility, which was originally built in the 1970s, has served as the home of several upgrades of the Janus laser, as well as several lower energy ultra-short-pulse lasers, all currently operated as user facilities. Part of the building that originally served as a capacitor bank area and then a storage room has been completely renovated to house the new Titan target area.

"Titan will be one of the premier user facilities in the world," said Hector Lorenzana of the Defense and Nuclear Technologies Directorate, who will use the new laser to study extreme materials properties. "Traditionally, we used the gas gun but you can only conduct one experiment per day. But here, we can do up to 10 experiments per day. And with the sub-picosecond capability of Titan, we can start probing unprecedented physics."

For Prav Patel of V Division, the construction of the Titan Laser is a great opportunity for LLNL. "Titan's unique long-pulse/short-pulse capability will enable Livermore scientists to conduct truly world-class pioneering research in high energy density physics," he said.

Andy Mackinnon of NIF will use Titan to help investigate the science base required to achieve fast ignition on NIF. "Titan promises to be a very exciting facility, where we will be able to test much of the physics of fast ignition," he said.

When commissioning is complete, scientists will be able to conduct many experiments on Titan in any given day, according to Ng. And Titan will operate along with the other user lasers in the Jupiter Facility: Janus, COMET, Callisto and Europa.

CAI

Continued from page 1

U.S. Department of Energy for DOE's nine Presidential Early Career Scientist and Engineer Award recipients.

Cai was nominated for the award by the National Nuclear Security Administration's Office of Defense Programs in recognition of his role in developing LLNL's Parallel Dislocation Simulator (ParaDiS), a supercomputer model that simulates the dynamics of crystals as they deform. Director Michael Anastasio said Cai's computational theory of dislocation dynamics "after many years has been able to unify dislocation physics and crystal plasticity in a new computational discipline."

A native of China, Cai received a bachelor's degree in optoelectronic engineering from the Huazhong University of Science and Technology in 1995 and his Ph.D. in nuclear engineering from MIT in 2001. He was a Lawrence Fellow in the Chemistry and Materials Science Directorate at LLNL from 2001 to 2004 and continues to collaborate with the Laboratory on materials research using ParaDiS.

Along with his work on dislocation dynamics, Cai also won recognition for "developing ways to deal with challenging multiscale problems, especially those with widely disparate time scales, and for the development of innovative tools to aid in teaching beginning students about atomistic simulations," according to the DOE awards brochure.

"His research, using massively parallel computing facilities at Livermore, has led to improved understanding of the fundamental mechanisms of resistance of metals to plastic deformation under normal and extreme conditions that are important to National Nuclear Security Administration mission needs."

The PECASE program recognizes outstanding scientists and engineers who show exceptional potential for leadership at the frontiers of knowledge. The presidential award is the highest honor bestowed by the U.S. government on scientists and engineers beginning their independent careers.

"I could not be more pleased that Wei has been honored for the great work he did while at Livermore," Anastasio said. "His innovations made it possible for a broad range of scientific and technical problems of great importance to LLNL and NNSA/DP to be addressed."

"The Department of Energy is proud that these researchers are making important contributions, in a wide range of fields, to innovation and technology for energy, economic and national security," Secretary of Energy Samuel Bodman said. "If the outstanding efforts of these scientists and engineers are any indication of the future, I have no doubt they will ensure America's scientific leadership far into the next century."

Cai is one of 58 recipients of the 2004 presidential awards, which were established in 1996. Each year eight federal departments and agencies nominate scientists and engineers at the start of their careers whose work shows the greatest promise to benefit the nominating agency's mission. Participating agencies award these beginning scientists and engineers up to five years of funding to further their research in support of critical government missions.

The awards foster innovative and far-reaching developments in science and technology, increase awareness of careers in science and engineering, give recognition to the scientific missions of participating agencies, enhance connections between fundamental research and national goals and highlight the importance of science and technology for the nation's future.

BIOLOGICAL

Continued from page 1

Control and International Security Directorate, which is part of a larger program effort to provide preparedness and restoration support to critical transportation nodes.

"Following the anthrax attacks in 2001, it became clear we had no real way of determining how clean is clean enough," Raber said. "Determining just how 'safe' is clean is the reason behind this report. It provides a framework for thinking about issues that must be considered in the decision to reopen a facility after an attack."

The report is a $1 million, two-year effort conducted by a prestigious committee of biosafety experts, research scientists, medical consultants and environmental experts. Dr. Ken Berns, of the University of Florida, chaired the committee. LLNL scientists presenting to the committee included Raber, Dennis Imbro, Ray Mariella, Kimothy Smith and Tina Carlsen.

The committee heard key briefings from interagency players, including the Environmental Protection Agency, the Centers for Disease Control, the Department of Defense and others. The committee was asked to assess risk for various amounts of residual contamination from agents such as plague, anthrax and smallpox in various public facilities, including airports. The report concludes that current data are insufficient to determine correlations. More research on dose-response relationships would allow scientists to narrow the uncertainty associated with the risks. However, even with improved correlations, the decision to reopen a facility is a complex issue that involves social decisions about what constitutes "safe."

Raber said the report did not plan to address in any detail the risk that such an attack will occur, the effectiveness of emergency response to the attack, the identification of the appropriate allocations of research or response, or broader public health issues related to transmissible diseases. It does not recommend specific decontamination technologies. Instead the report reviews the key factors that influence decision-making and lays the foundation for establishing standards and policies for relevant aspects of decontamination.

Raber said the report should serve as a resource to help all decision makers understand the relevant concerns and come up with effective responses to key public health and environmental concerns. The report concludes that more research on dose-response relationships would allow scientists to narrow the uncertainties associated with health risks. The report has two major conclusions:

- "Infectious doses for harmful biological agents that can be used as weapons cannot be determined with confidence because the infectivity and virulence of harmful agents can vary by strain, within species, and by type of preparation for weapons. Currently available data on dose-response relationships are not as detailed as demanded by modern scientific standards, in most cases covering only exposure in young healthy adults."
- "There is insufficient information on which to base "safe" numbers of residual biological agents for a decontaminated facility. Further research could provide additional information on infectious dose that would decrease the uncertainties and make a quantitative approach more useful. However, the risk different people or groups of people are willing to tolerate will always vary."

The report also stresses preparedness plans for key transportation facilities and identifies key scientific areas where future investments can increase public safety.

"Through this report we now have a greater understanding of where the problems lie and what we need to do to address them," said Elizabeth George, deputy director for Biological Countermeasures, Department of Homeland Security (DHS). "The report provides 50 recommendations that can be evaluated and prioritized to increase public safety. It is an excellent evaluation and resource of what we know today and what we need to build on for the future."

"This report provides a foundation for researchers, infrastructure managers and government officials that helps them plan how to best restore important facilities to use," said Patrick Fitch, LLNL's Chemical and Biological National Security Program leader. "As the Lab's program in Chemical and Biological National Security looks to the future, this report is an important component to address challenges like wide area cleanup and rapid testing of contaminated areas. The LLNL scientists that participated in the study are to be commended for helping the National Academies in this important study."

The National Academy of Science report is available on the NAS public Website at http://www.nap.edu/.

Directors of weapons labs hold meeting in Siberia

Directors from the U.S. and Russian weapons laboratories held their biennial meeting earlier this month in Siberia at the All-Russian Institute of Technical Physics (or VNIITF).

The June 4 meeting coincided with the 50th anniversary of the founding of Russia's second nuclear weapons lab, which is located in Snezhinsk near the Ural Mountains, about 1,000 miles east of Moscow. During the Cold War, VNIITF was known as Chelyabinsk-70.

LLNL was represented by Bruce Goodwin, the Lab's associate director for Defense and Nuclear Technologies, who filled in for Lab Director Michael Anastasio. Goodwin was joined on the trip by Jay Zucca, the principal deputy leader for Proliferation and Terrorism Prevention (P Division).

Other U.S. participants included Don Cobb, deputy director of Los Alamos National Laboratory, and Tom Hunter, president of Sandia National Laboratories.

The Russian laboratory directors who attended were G.N. Rykovanov, director of VNIITF; R.I. Ilkaev, director of the All-Russian Institute of Experimental Physics (or VNIIEF, previously known as Arzamas-16); and Yu. N. Barmakov, director of the Institute of Automatics (VNIIA)

During the directors session, the U.S. and Russian laboratory leaders discussed joint threat reduction efforts as well as cooperative work in basic science. Representatives of both nations said they recognize the value of this work and want it to continue.

Prior to the afternoon meeting of the U.S. and Russian laboratory directors, an international conference was held of the directors from the nuclear laboratories of the five originally declared nuclear weapons states; the United States, Great Britain, Russia, China and France. The Permanent-5 meeting consisted largely of a discussion of nuclear weapons policy in the 21st century and representatives of several of the nations offered their views.

BONE

Continued from page 1

the DOE Joint Genome Institute in Walnut Creek characterized a human mutation associated with the malfunctioning of the sclerostin, or SOST, gene, and showed that it plays a key role in regulating bone formation. The culprit is a regulatory element in a missing 52,000-base-pair stretch of DNA that normally directs the SOST gene to produce a protein that maintains control of bone formation rates. Without this regulator, bone production goes up, progressively increasing bone density, or osteosclerosis.

The effect primarily occurs in the skull and lower jaw of Van Buchem patients, causing facial distortions and pinching cranial nerves, which can lead to deafness and blindness. Collarbones, ribs and long bones can also be affected.

The research team, led by Gabriela Loots of Livermore's Genome Biology Division, reports its findings today in the online version of the journal *Genome Research.*

Noncoding DNA segments — long stretches of DNA that do not code for proteins and were once thought to have no biological function — are now being found to contain regions that play a key role in switching distant genes on and off. Today's study is one of the first to pinpoint a disease-associated mutation that alters one of these long-range regulatory elements.

"Our study addresses a fundamental issue with regard to the majority of the human genome that is noncoding in nature, and its potential impact on human health," Loots said. "Noncoding regions located far away from the genes they regulate are critical for normal gene expression and are capable of leading to dramatic abnormal phenotypes (individual characteristics, such as diseases or defects) if altered or deleted."

To investigate the misregulation of the SOST gene, Loots and her colleagues genetically engineered a copy of the DNA segment containing the gene and used it to

Research on a mutation in a gene regulating bone formation appears in the July issue of *Genome Research.*

generate mice with and without the 52,000-base-pair region missing in Van Buchem patients. The deleted region is located about 35,000 base pairs "downstream" from SOST on human chromosome 17. While they found no difference in the activity of the SOST gene in early mouse embryos, the gene was dramatically "down-regulated," or less active, in adult mice carrying the deleted region than in the normal mice.

The findings are strong evidence that "the (Van Buchem) noncoding deletion removes a SOST-specific regulatory element," the team reported, indicating that the disease is caused by the absence of one or more distant enhancer elements in the deleted region that help direct the expression of the SOST gene in adult humans.

In an effort to locate the specific enhancer sequence responsible for SOST regulation, the team compared human and mouse DNA and found seven common segments within the 140,000-base-pair SOST region. Scientists assume that DNA segments that have been "conserved" from one organism to another during evolution play a biological role, or they would have been discarded as organisms evolved. By introducing the conserved segments into cells similar to osteoblasts (bone-forming cells), the team found that a 250-base-pair conserved region named ECR5 was able to drive SOST expression.

"This study represents a clear and unambiguous case in which altering noncoding genomic content has a deleterious impact on gene expression," the team reported, "demonstrating that mutations in distant regulatory elements are able to cause congenital abnormalities analogous to coding (gene) mutations."

"Human genetic diseases of the skeleton such as sclerosteosis and Van Buchem disease provide a starting point for understanding the modulation of anabolic bone formation," noted team members Michaela Kneissel and Hansjoerg Keller of Novartis, "and ultimately have the potential to identify key molecular components that can be used as new therapeutic agents to treat individuals suffering from bone loss disorders" such as osteoporosis. "Therefore the findings stemming from this collaboration, along with the mouse models created, have clinical relevance in addition to addressing a fundamental problem in genomics."

Working with Loots on the study were Jessie Chang and Nicole Collette of LLNL, Dmitriy Ovcharenko and Ingrid Plajzer-Frick of Lawrence Berkeley, Eddy Rubin of Lawrence Berkeley and JGI, and Kneissel, Keller and Myma Baptist of Novartis. Funding for the research was provided by the U.S. Department of Energy's Office of Science and by the National Institutes of Health.

NIF

Continued from page 1

missions. It's now in the process of beginning the National Ignition Campaign, which will culminate near the end of this decade with fusion ignition, the controlled creation of energy using lasers.

The project is now 80percent complete with 96 percent of its procurements are under contract.

Moses said, "All the program elements to succeed at ignition are in place. Working with our partners at Los Alamos National Laboratory, Sandia National Laboratory, the Laboratory for Laser Energetics at the University of Rochester and General Atomics, we have developed a balanced risk strategy to meet our 2010 ignition goal."

After treating 800 members of the NIF team to a multimedia presentation highlighting NIF's scientific and technical accomplishments, Moses said that significant progress has been made in designing new beryllium targets. These targets will allow NIF to achieve ignition at lower laser energy levels.

Earlier this week, the U.S. Senate Energy and Water Appropriations subcommittee proposed funding cuts for fiscal year 2006. In addressing those proposed cuts, Moses cautioned that this is just one step in the budget process and that the House of Representatives has approved full funding as requested by the president. The final result will come from a conference committee later this year.

"Remember," said Moses, "that this is just part of the legislative process. It is our job to give our supporters good results that will keep them enthusiastic about NIF."

Moses also spoke about the longer-term missions in fusion energy, homeland security and Department of Defense programs that the Laser Science and Technology organization is pursuing.

He also reiterated the continuing importance of maintaining a safe work environment, pointing out that NIF has achieved its world-class safety record by following the principles of personal responsibility and excellent teamwork.

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